

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) ~~Apparatus comprising a perfusion fluid loop~~ Portable apparatus for maintaining an *ex vivo* organ in a viable condition for transplantation, ~~said perfusion fluid loop~~ the apparatus comprising:

A. an organ container comprising an interior space for receiving an organ to be transported;

B. a bubble remover for removing gas bubbles from perfusion fluid disposed in said perfusion fluid loop, and comprising a headspace and a venting valve;

C. an oxygenator for supplying oxygen to and removing carbon dioxide from comprising a chamber for receiving perfusion fluid disposed in said perfusion fluid loop, a gas space for receiving oxygen, and a gas exchange interface allowing gas exchange between the chamber and the gas space;

D. a perfusion loop comprising the organ container interior space, the bubble remover headspace, and the oxygenator chamber interconnected to provide fluid circulation;

E. a pump configured for circulating a perfusion fluid through the perfusion loop; and an outer container sized and configured to contain the organ container, the bubble remover, the oxygenator, the perfusion loop, the pump, and a supply of oxygen in an operative relationship;

F. in which at least one of said the organ container, said bubble remover, and said oxygenator is disposable after a single use the bubble remover, the oxygenator, and the perfusion loop are movable into and out of the outer container and into and out of an operative relationship with the pump while the perfusion loop remains closed.

2. (Currently amended) The apparatus of claim 1, in which ~~said the~~ perfusion loop further comprises a flexible tube, ~~said flexible tube is an unbroken length of tubing connected at one end to one of said organ container, bubble remover, and oxygenator, and at the other end to another of~~

~~said organ container, bubble remover, and oxygenator, and said~~ and the pump comprises a peristaltic impeller for driving fluid flow in ~~said the~~ flexible tube.

3. (Currently amended) The apparatus of claim 1, in which the perfusion loop further comprising ~~a temperature regulator in comprises a heat exchange relation to said perfusion fluid loop. surface.~~

4. (Currently amended) The apparatus of claim 3, ~~in which said temperature regulator is a cooler comprising a vessel for containing a coolant and a heat exchange tube, said tube having inlet and outlet ends adapted for connection into said~~ further comprising a chiller configured for operative association with the heat exchange surface to cool a perfusion fluid circulating in the perfusion loop and a bight portion disposed within said vessel for contacting a coolant in said vessel.

5. (Currently amended) The apparatus of claim 3 in which ~~said temperature regulator the chiller~~ is a Peltier-effect thermoelectric heat pump.

6. (Currently amended) The apparatus of claim 5, in which ~~said the~~ heat pump is adapted to selectively heat or cool ~~said the~~ perfusion fluid.

7. (Currently amended) The apparatus of claim ~~5,~~ 3, further comprising a temperature control for controlling the temperature of a perfusion fluid in ~~said the~~ perfusion fluid loop.

8. (Currently amended) The apparatus of claim 7, in which ~~said the~~ temperature control is programmed to cool perfusion fluid in ~~said the~~ perfusion fluid loop following a specified temperature-time profile.

9. (Currently amended) The apparatus of claim 8, in which ~~said the~~ temperature control is further programmed to heat perfusion fluid in ~~said the~~ perfusion fluid loop following a specified

temperature-time profile, after cooling perfusion fluid in ~~said~~the perfusion fluid loop following a specified temperature-time profile.

10. (Currently amended) The apparatus of claim ~~3~~, 4, in which ~~said organ container has a~~the heat exchange surface ~~and said temperature regulator of the perfusion loop is at least a portion of the organ container and the electric chiller~~ is in heat-exchange contact with ~~said~~the heat exchange surface.

11. (Currently amended) The apparatus of claim 3, wherein ~~said~~the perfusion fluid loop further comprises a reservoir.

12. (Currently amended) The apparatus of claim 11, wherein ~~said temperature regulator is disposed within said reservoir.~~ a wall of the reservoir defines the heat exchange surface.

13. (Currently amended) The apparatus of claim 1, further comprising a processor programmed for processing data associated with ~~said~~the apparatus.

14. (Currently amended) The apparatus of claim 13, further comprising an input device for communicating to ~~said~~the processor the size and type of organ being transported in ~~said~~the apparatus.

15. (Currently amended) The apparatus of claim 13 in which ~~said~~the processor is programmed to adapt a parameter to suit the type and size of organ entered at ~~said~~the input device.

16. (Currently amended) The apparatus of claim 15, in which ~~said~~the parameter is oxygen partial pressure or oxygen flow rate.

17. (Currently amended) The apparatus of claim 1, ~~in which said perfusion fluid loop comprises a headspace positioned for collecting a gas from perfusion fluid and a venting valve communicating with said headspace, through which a gas may be vented to the atmosphere, said apparatus further comprising a processor, said~~ in which the venting valve being of the bubble remover is controlled at least in part by control signals from said the processor.

18. (Currently amended) The apparatus of claim 17, further comprising a gas sensor for detecting the presence of gas in ~~said~~ the headspace requiring purging, ~~said~~ the processor being programmed to open ~~said~~ the venting valve to vent gas when ~~said~~ the gas sensor detects the presence of gas in ~~said~~ the headspace requiring purging.

19. (Currently amended) The apparatus of claim 18, further comprising a gas sensor for detecting the absence of gas in ~~said~~ the headspace requiring purging, ~~said~~ the processor being programmed to close ~~said~~ the venting valve when ~~said~~ the gas sensor detects the absence of gas in ~~said~~ the headspace requiring purging.

20. (Currently amended) The apparatus of claim 18, further comprising a pressure sensor for detecting pressure within the perfusion fluid loop and transmitting data reflecting the pressure to ~~said~~ the processor.

21. (Currently amended) The apparatus of claim 1, in which ~~said~~ the organ container, ~~said~~ the bubble remover, and ~~said~~ the oxygenator are disposable after a single use.

22. (Currently amended) The apparatus of claim 21, further comprising a flexible tube that is disposable after a single use joining at least two of ~~said~~ the organ container, ~~said~~ the bubble remover, and ~~said~~ the oxygenator.

23. (Currently amended) The apparatus of claim 22, further comprising a reusable impeller engageable with ~~said~~ the flexible tube for propelling perfusion fluid through ~~said~~ the flexible tube.

24. (Currently amended) The apparatus of claim 21, comprising a portion defining the perfusion fluid loop that is disposable after a single use and ~~normally exposed to a perfusion fluid in said perfusion fluid loop when said apparatus is in use, and~~ a reusable portion not normally exposed to a perfusion fluid in ~~said~~ the perfusion fluid loop.

25. (Currently amended) The apparatus of claim 1, in which ~~said~~ the organ container is disposable after a single use.

26. (Currently amended) The apparatus of claim 1, further comprising a radio frequency identification tag installed in fixed relation to ~~said~~ the organ container and configured to communicate at least one datum respecting at least one of ~~said~~ the organ container and its contents.

27. (Currently amended) The apparatus of claim 26, further comprising a radio frequency identification tag reader for detecting data transmitted by ~~said~~ the radio frequency identification tag.

28. (Currently amended) The apparatus of claim 27, further comprising a processor programmed for receiving data from ~~said~~ the reader and controlling ~~said~~ the apparatus responsive to the data.

29. (Currently amended) The apparatus of claim 28, in which ~~said~~ the data represents a parameter selected from at least one of perfusion fluid pressure, perfusion fluid flow rate, perfusion fluid temperature, perfusion fluid temperature-time profile, perfusion fluid oxygen pressure, perfusion fluid carbon dioxide pressure, perfusion fluid nutrient level, perfusion fluid metabolite level, or the maximum remaining transport time allowed for ~~said~~ the organ.

30. (Currently amended) The apparatus of claim 1, in which ~~said the~~ organ container comprises a cover having an inside portion and an outside portion, ~~said the~~ apparatus further comprising an adapter having a first portion defining a perfusion fluid inlet, a second portion adapted for connection to a vessel of an organ in ~~said the~~ organ container for directing perfusion fluid into the vessel, and a quick connect-disconnect coupling for connecting ~~said the~~ adapter to the inside portion of ~~said the~~ cover.

31. (Currently amended) The apparatus of claim 1, in which ~~said the~~ bubble remover is disposable after a single use.

32. (Currently amended) The apparatus of claim 1, in which ~~said the~~ oxygenator is disposable after a single use.

33. (New) The apparatus of claim 1, in which the organ container, bubble remover, and oxygenator are mechanically joined, enabling them to move as a unit.

34. (New) The apparatus of claim 1, further comprising a support on which the perfusion loop and its components are carried together.

35. (New) The apparatus of claim 4, further comprising a coolant vessel configured to contain a coolant cooled by the chiller, wherein said heat exchange surface is disposed within the coolant vessel for contacting a coolant in the vessel.